Space Weather Forecast

Issued on Friday, 03 June 2022 at 01:17 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of G1/Minor Storm intervals with a slight chance of G2/Moderate Storm either later Day 3 or early Day 4 (05-06 June) from possible CME arrival(s).

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Solar activity has been Low, with a common class flare observed from an eruption on the east limb. There are four sunspot regions on the visible disc, none of which have shown significant activity, but with the most prominent in the northwest quadrant. There is also an interesting sunspot in the southern central disc, which although small and simple, has the reverse magnetic polarity to that expected for a southern hemisphere spot during this solar cycle. However, this has shown no notable activity to date. The other two regions are small unipolar spots. A potentially Earth-directed coronal mass ejection (CME) was observed coming from the southwest disc, with this possibly giving a glancing blow either later on 05 June or on 06 June.

Solar Wind / Geomagnetic Activity: The solar wind has been at largely background levels through this period. Wind speed has declined slightly from around 400 km/s to near 360 km/s. The interplanetary magnetic field strength has been weak, with the north-south component varying weakly, but predominately in the negative direction. Geomagnetic activity was Quiet (Kp 1-2).

Energetic Particles / Solar Radiation: The count rate of solar energetic particles (high energy protons) remained at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary
Solar Activity: Solar activity is expected to be Low to Very Low, with a chance of further Common-class flares and a slight chance of Moderate-class flares.

Solar Wind / Geomagnetic Activity: Two filament lift-offs have been observed, the first around 01/0100 UTC, and the second around 02/0530 UTC. They have both given CMEs with the potential for a glancing blow at Earth. These two CMEs may combine for an arrival either later on Day 3 (05 June) or during Day 4 (06 June). Both CME assessments carry low confidence, however.
Aside from the CMEs, background wind speeds are expected to persist through the period. Geomagnetic activity is forecast to be predominately Quiet through to Day 3, but increasing to Unsettled to Active with a chance of G1/Minor Storm, and a slight chance of a G2/Moderate Storm, if we see the CME(s) either later Day 3 or early Day 4.

Energetic Particles / Solar Radiation: The count rate of solar energetic particles (high energy protons) is forecast to remain at background with no solar radiation storms occurring.

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Met Office Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	30	30
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	10	10	10	10
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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